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ABSTRACT

The third paper in a series summarizing treatment and discharge variables from a community mental health center focuses on the interrelationships among client, process, and outcome variables. Analysis of such factors as initial impairment level, treatment time, process variables, discharge variables and therapeutic outcome is said to have pointed out conclusions about treatment outcome and the following variables: average costs, number of sessions, degree of change, and treatment modality by cost. It is explained that outcome was not found to be directly related to cost, nor was the cost of varied outcomes related to treatment modality. (CL)

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A STUDY OF OUTCOME AND COST

SHERRI N. SHEINFELD, M.S.W.

I am going to describe the interrelationships among client, process and outcome variables in the child outpatient services in the Hahnemann Community Mental Health/Mental Retardation Center. Heinicke and Strassman (1975) recently reviewed all the major studies of child outcome in psychotherapy, and found the level of validity of the findings in much of the research:

> "...somewhat analogous to giving a pharmacist some training in surgical techniques, having him do exploratory brain surgery, and then generalizing the results of his operation to what an experienced neurosurgeon might have accomplished without a specific disorder".

Two conclusions of this research may, however stated with conviction:

1. "Single, objective factors of the child and his/her background such as: age, sex, intelligence, ordinal position, source of referral and socioeconomic class have been found singularly unrelated to the outcome of psychotherapy" (Lessing, E. and Schilling, F., 1966)

2. As clinical common sense would dictate, parental impact, or the involvement of the parent in child psychotherapy, is significantly related to outcome.

Most of the rest of the literature on the outcome of child psychotherapy is inconsistent and oftentimes, contradictory. Thus to begin our work in this as-yet under-researched area, we uncovered an enlightening article, again by Heinicke and Strassman,

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(1975) which categorized the three major influences on the outcome of child psychotherapy thusly:

(1) the nature of the child's initial development or diagnosis, and the severity thereof;
(2) the frequency (intensity) of sessions;
(3) aspects of parental involvement and impact.

Although the nature of the exact relationship between these three is as yet uncovered, we began our first outcome study, which we share with you today, by looking at the first two of these three issues. We shall explore the third, parental impact, in our present field study, which we will not discuss with you today. Let me begin my discussion by presenting the change score, our measure of psychotherapeutic outcome.

A change score was developed for each child in the study. This score was calculated by subtracting the therapist's Initial Impairment rating of the client from his/her Final Client Impairment rating, according to the Hahnemann Child Impairment Scale (Siegel, 1974).

Three criterion groups were developed from the change scores: those whose ratings at discharge indicated less impairment, (Got Worse) no change in impairment, (Stayed the Same) and more impairment, (Improved).

Exclusion of the Extreme Scores

Children and adolescents who received ratings of 1, "Little

or No Impairment", 5, "Serious", or 6, "Severe" ratings at intake on the Hahnemann Child Impairment Scale, were excluded from this analysis.

We excluded these children as they could demonstrate only unidirectional movement from starting point, or Initial Impairment level, e.g., the Initial Impairment rating of 1 could move only toward 2, or more impairment. The problem of constructing psychiatric rating scales to allow for multi-directional client movement in therapy has been cited in recent literature (See: Sainsbury, 1975).

We are aware, in using this change score, that these criterion groups provide no explanation for the meaning of improvement or nonimprovement in the child. The change score may represent an actual change in the child's impairment level, or, it may reflect the therapist's increasing acquaintance with, and/or knowledge of the client and his/her problem. It is also possible that the Final Impairment rating was influenced by the therapist's knowledge of the Initial Impairment rating.

Let me now move to a discussion of the results of our outcome exploration.

Initial Impairment level. We found a borderline significance between Initial Impairment level and therapeutic outcome ($X^2=8.15$; $df = 4$; $p > .05 < .10$). Within the range of clients studied (Minimal to Moderately impaired), the Minimally impaired tend to get worse, the Moderately impaired, better. (Table 1)

Treatment time. For three of four variables of treatment time--Length of Stay, Intensity, and Percentage of Broken and Can-

celled Appointments, there are no significant relationships with therapeutic outcome. (See Table 2) This will be discussed again, under the cost-outcome section of my presentation.

It appears that impairment level changes indicate improvement with increase in Number of Sessions regardless of intensity of treatment, how long the client stayed in treatment, or how many appointments were broken or cancelled. This finding must however, be interpreted with caution in that treatment intensity covers a relatively narrow range.

Clients were seen about three or four times a month, or slightly less than once a week, as we discussed earlier. Thus, it is possible that if more clients were seen more than once a week, a relationship would have emerged between outcome and treatment density.

Process Variables and Therapeutic Outcome

Therapist discipline. We found a borderline significance between discipline of the principal therapist and therapeutic outcome (Table 3; $X^2 = 12.33$; $df = 6$; $p > .05 < .10$). A trend suggests that the social worker's caseloads were more likely to include clients rated as Improved, and psychologists, those who Got Worse. Although this finding is of borderline significance, perhaps the methods and techniques unique to social work practice are most effective with the type of clients and families treated by this urban center.

Alternately, these results may have emerged by chance, or they may reflect a tendency among social workers to use psychiatric impairment ratings differently than the other professional and non-professional disciplines.

Discharge Variables and Therapeutic Outcome

Decision to discharge. There is a significant relationship between Decision to Discharge and therapeutic outcome (Table 4; $X^2 = 12.80$; $df = 2$; $p < .01$). The most dramatic finding suggests that those who Improved were more likely than the other two outcome groups to have been mutually involved with the therapists in decision to terminate treatment.

Needs further treatment. We found a significant relationship between therapist's judgment of the client's Need for Further Treatment and therapeutic outcome (Table 5; $X^2 = 18.03$; $df = 2$; $p < .01$). Those who Improved were less likely to have been judged as needing further treatment than the other two groups, a reasonable finding. Specifically, 53 percent of improved cases were judged as needing further treatment, while 88% of the remaining clients were judged as requiring further treatment.

Let me now begin to discuss the relationship of these treatment outcome findings to the cost of care in the Hahnemann center.

My methods of display and the cost-effectiveness questions I will now ask are generally meant as examples of the usefulness of the matrix I will present. This matrix may help to explore and direct significant clinical and administrative questions; its apparent simplicity is thus seductive.

Service Cost and the Outcome of Care

Recently we completed a cost-finding study in all the Hahnemann outpatient units, to determine the cost of one hour of treatment. Such studies are becoming increasingly important as community Mental Health

Centers begin to compete for third party payments, in a fiscal environment of shrinking funds. Our method was one of directly allocating all indirect and clinically-related costs (from rent, heat and electricity to record-keeping and consulation and education) to the salaried hour of clinician time.

The results of our efforts may be briefly summarized thusly:

The total cost for an hour of child outpatient service was found to be $65.00. This included the full salary costs of clinicians working in all outpatient services, the full cost of students practicing and facilities costs. These figures also include the overhead expense of medical college affiliation so important for legitimation in the academic community. The $65 cost also contained all expenses associated with a comprehensive community treatment center, including a full range of services, from: Drug and Alcohol centers to Consultation and Education, Research & Evaluation, as well as the cost of maintaining a liaison to the community through the Community Board. In addition, these costs reflect the pattern of high broken and cancelled appointments, which were discussed earlier, and which reach 28% in the Children's outpatient units.

A bit more about the costs. Indirect or fixed costs occupy about 46% of the $65 hourly clinical treatment cost; direct clinical service (the actual salary cost of providing an hour of psychotherapy) comprise about 14% of all service costs. Clinically-related tasks (such as record keeping and clinician liaison work with schools, courts, etc.) amount to 41% of the annual cost of an hour of service. The difference between the annual hourly costs of the Adult and Child units is small; the adult

hourly cost is $62.00 although both program types and volumes of service vary greatly. (The Adult program sees about two times more clients per year, than the child).

With this brief description as a background, let me now describe the procedure we used to combine this unit of service cost for Children's Service outpatient treatment with the change score, the outcome measure I described earlier.

I am now going to display the Results of the cost-outcome procedure in a matrix format.

Cost Outcome Matrix

Table 6 illustrates the number of children who were rated psychiatrically less impaired (Improved; N = 36), at the same level of impairment (Stayed the Same; N = 70), or those who became more psychiatrically impaired (Got Worse or Regressed; N = 15) from the start to the end of therapy in the Hahnemann Child Outpatient clinics. Those children who Improved rest on the upper right-hand guadrant of the matrix; those who Stayed the Same, along the diagonal of the figure; those who Got Worse during treatment lie in the lower left-hand corner of the matrix (See Figure 2).

This table (Table 6) also includes the total cost of all sessions, for all children in either of the three criterion groups ($60647.97), and average cost per session ($\bar{X}$ = $501.22) for each group of rated children. As you can see, unit of service cost data was summarized for each of the 139 discharged child outpatients from cost information described earlier in this paper. Thus, for example, four clients improved from an impairment rating of three at intake, to an impairment

rating of one, at discharge. The average cost to the Hahnemann center for all five clients was $201.89; the total resource consumption of these five children was $807.55. As number of sessions is associated with improvement in therapy, those who Improved cost more than those who Got Worse (Sheinfeld and Shure et. al., 1977). However, as number of clients is also related to cost, those who Stayed the Same consumed the greatest amount of center resources ($33467.15).

Treatment Outcome and Average Costs

This table (Table 7) further separates the three criterion groups by number of hours and average costs per treatment outcome. Although the range of costs for the three criterion groups is quite small, overall, the cost of children who Improved is the greatest. The number of children in each group is greatly skewed, with children who Stayed the Same, the most numerous, and those who Got Worse, the least. Number of Sessions for those who Stayed the Same were the most varied (within the range 2.45 to 19.30 hours).

Treatment Outcome and Number of Sessions

Surveying Table 8 one discovers that those who Improved received more treatment hours, and thus were about two times more costly than those who Got Worse (Improved, $\bar{X}$ = 9.223 sessions; Got Worse, $\bar{X}$ = 4.946 sessions; $t = 2.680$, $df = 49$, $p < .05$).

Treatment Outcome and Degree of Change

Table 9 indicates that more of the clients who regressed, regressed more levels of impairment than those who improved, although the range is quite small. The extreme scores have been

eliminated from the analysis, thus further constricting the possible score variation. The cost to improve on level is almost twice the cost to regress the same amount, a clinically reasonable finding.

Treatment Outcome and Treatment Modality by Cost

Further analyses were made of children who Improved or Got Worse during treatment, to determine the differences in client change (rather than client maintenance) by therapeutic modality or type and its cost (See Table 10). All children were placed in either individual therapy, or in other-than individual treatment, herein termed "other". There are no statistically significant differences between the number of sessions, and thus the cost of care delivered in individual psychotherapy and other than individual psychotherapy. (Individual, $\bar{X}$ = 7.826 sessions; "Other", $\bar{X}$ = 8.035 sessions; t = .128; df = 49; p = n.s.).

However, individual therapy may be a more "pure" category than other than individual psychotherapy. That is, more clients may have received only individual therapy in this category, than received only group, family/couple or collateral, comparable categories. (Although a mere 7 clients received only individual, or only group, family/couple, and/or collateral therapy.) The "multiple effects" of treatment types (eg. diagnostic testing, one hour, and individual therapy, seven hours) on client change in treatment and the cost of care are thus difficult to assess. Varied combinations could result in optimal session length, number and cost.

In summary, our unique conclusions were the following:

Number of Sessions and Outcome

The strongest findings of this study suggest that clients who improved were more likely than others to be seen for more sessions, involved with the therapist in discussion about discharge, and less often judged as needing further treatment. These findings are consistent with those of Maas (1955), who, with more global measures of outcome, found a highly significant relationship between outcome of services and the number of kept appointments.

Considering the modest Density (ie., frequency) of treatment in the group as a whole, one could predict that increasing sessions frequency (and thus number of sessions over any given time period) might function to the advantage of clients. (See: Witmer et. al., 1933; Heinicke, 1969). Some mechanisms that decrease the high number broken and cancelled appointments and thus increase the frequency of sessions might serve a similar function.

Many of Hahnemann Child Outpatient clinics draw their clients from an urban ghetto area. This population typifies the unfavorable characteristics of this environment, including: unstable familial ties, poor pre-natal and child care, unlikely prevention or early detection of illness, poverty, crime and gang war. There are obviously special problems involved in treating large numbers of low socioeconomic class minority group members for mental or emotional disorders. Perhaps therapists, charged with the mission of seeing many of these multi-problem clients, have adopted the pattern of once-weekly treatment to

effectively spread their treatment resources over a large number of children, rather than concentrating increased efforts on specific clients. Or, these multi-problem clients have dictated the nature of treatment, by failing to appear for sessions when scheduled more than once a week.

Perhaps too, the once a week treatment session may have become a habit for professionals working in the clinics, borne of a history of the weekly private practice model. Whatever explanation the data might suggest for current therapeutic practice, it seems that any mechanism developed to increase the frequency of psychotherapeutic sessions might serve to the client's benefit in a similar outpatient community mental health center. Because cost is so strongly tied to the provision of services, an explanation of the unit cost is critical when one speaks of treatment effectiveness.

In this study, outcome was not found directly related to cost, except through the indirect medium of number of sessions. Nor was the cost of varied outcomes found related to treatment modality, as measured. However, the effect of varied staff disciplines and salary levels with different client types, or varied modality sequences was not studied. As one speaks of increasing client sessions, one is also faced with some cost factors. Thus, by combining this treatment outcome data with unit of service cost figures, in a cost-outcome matrix, the decision-maker may begin to focus on service needs within the constraints of limited resources. Through the use of the matrix, the decision-maker is faced with cost and service outcome information, thus enabling him/her to decide on appropriate action with regard to

client treatment by modality, and within disparate programs. As a result of this focus, the utility of the cost-finding and subsequent evaluation effort itself may be increased (See: Newman, 1978), and the administrator and/or clinician may move toward more effective and intelligent clinical decision-making.

Problem of Measurement

Given the significant problems of measuring outcome in psychotherapy, in general, and the limitations of the change score used in this investigation, we were somewhat encouraged by the significant findings in this study.

The measure used in this exploration to assess impairment level needs further work to explore its sensitivity to adjustment level and rater reliability before it can be used with assurance. However, it identifies some major components of client change and client outcome in psychotherapy, and thereby provides the base upon which our further explorations of the area rest.

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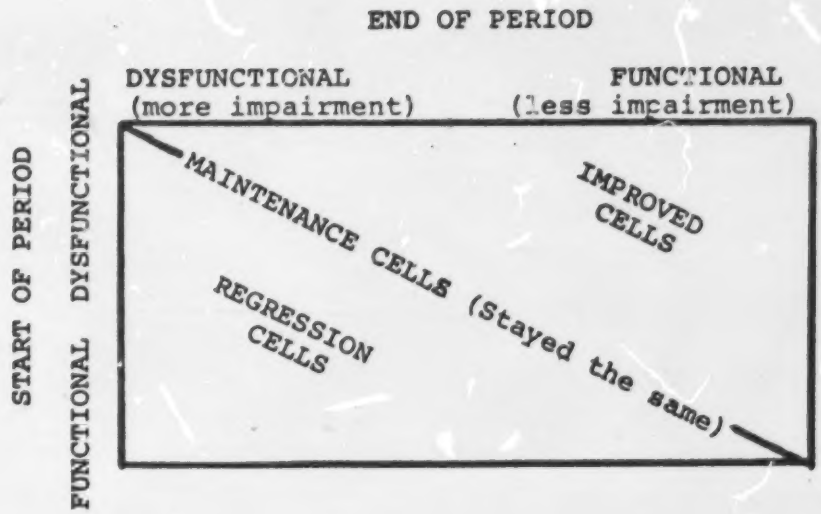
FIGURE 1

DIRECTION OF TREATMENT OUTCOME CHANGE



Adapted from: Newman, Frederick L., and Sorensen, James E. Using Client Cost-Outcome Data in Program Analysis and Management: Programmed Instruction Exercises. Draft, December, 1975.

Table 1

Relationship Between Initial Impairment Level and Therapeutic Outcome

		Therapeutic Outcome		
	Improved	Stayed Same	Got Worse	Total
Initial Impairment Level				
	e (12.67)	(23.67)	(5.67)	
2	o 9	22	11	42
	e (13.27)	(24.79)	(5.94)	
3	o 13	27	4	44
	e (12.06)	(22.54)	(5.4)	
4	o 16	22	2	40
Total	38	71	17	126

$X^2 = 8.15$ (Yates correction applied)

df = 4

$p > .05 < .10$

Impairment Codes:

2 = minimal

3 = mild

4 = moderate

Table 2

Relationship Between Treatment Time Variables and Therapeutic Outcome

Treatment Time Variables	Therapeutic Outcome: Improved $\bar{X}$	Improved SD	Improved N	Stayed Same $\bar{X}$	Stayed Same SD	Stayed Same N	Got Worse $\bar{X}$	Got Worse SD	Got Worse N	F	df	p
Broken and Cancelled Appointments	3.46	3.40	37	2.43	2.89	65	2.18	2.48	17	1.70	2,116	ns
Density of Treatment	.12	.13	38	.12	.09	71	.10	.07	17	.24	2,123	ns
Length of Stay	114.26	79.48	38	84.54	77.74	71	92.29	98.00	17	1.67	2,123	ns
Number of Sessions	8.16	4.71	38	5.97	4.94	.71	4.88	3.80	17	3.76	2,123	.05

Table 3

Relationship Between Principal Therapist Discipline and Therapeutic Outcome

	Therapeutic Outcome			
	Improved	Stay Same	Got Worse	Total
Therapist Discipline				
	e (4.25)	(7.63)	(2.13)	
Psychiatrist	o 5	6	3	14
	e (11.23)	(20.15)	(5.62)	
Psychologist	o 9	18	10	37
	e (11.23)	(20.15)	(5.62)	
Social Worker	o 17	18	2	37
	e (7.28)	(13.07)	(3.64)	
Mental Health Worker, Technician	o 3	19	2	24
Total	34	61	17	112

$X^2 = 12.23$ (Yates correction applied)

df = 6

$p > .05 < .10$

Table 4

Relationship Between Decision to Discharge and Therapeutic Outcome

		Therapeutic Outcome			
		Improved	Stayed Same	Got Worse	Total
Decision to Discharge					
	e	(22.11)	(35.13)	(9.76)	
Client-Family	o	14	41	12	67
	e	(11.88)	(18.87)	(5.24)	
Therapist-Mutual	o	20	13	3	36
Total		34	54	15	103

$X^2 = 12.80$

$df = 2$

$p < .01$

Table 5

Relationship Between Needs Further Treatment and Therapeutic Outcome

		Therapeutic Outcome			
		Improved	Stayed Same	Got Worse	Total
Needs Further Treatment					
	e	(29.25)	(54.65)	(13.09)	
Yes	o	20	62	15	97
	e	(8.75)	(16.34)	(3.91)	
No	o	18	9	2	29
Total		38	71	17	126

$X^2 = 18.03$

df = 2

$p < .01$

TABLE 6
TREATMENT COST AND OUTCOME FOR
DISCHARGED CHILD OUTPATIENTS

LEVEL OF FUNCTIONING
AS OF MARCH 1976
(ENDING)

LEVEL OF FUNCTIONING
AS OF MARCH 1975
(STARTING)

	6	5	4	3	2	1
6						
5						
4		$529 2 $264.5	$10904.59 22 $ 495.66	$6506.98 9 723	$5093.80 6 $ 848.90	
3		$197.03 1 $197.03	$1545.95 2 $ 772.98	$14538.90 27 $ 538.48	$3801.83 8 $ 475.23	$807.55 4 $201.89
2		$1185.21 5 $237.04	$ 608.29 1 $ 608.29	$ 959.81 4 $ 239.95	$8043.66 21 $383.03	$5925.37 9 $658.37
1						
		$911.24 8 $238.91	$13058.83 25 $ 522.35	$22005.69 40 $550.14	$16939.29 35 $483.98	$6732.92 13 $517.92

$6064797
121
$ 501.22

TABLE 7

RELATIONSHIP BETWEEN NUMBER OF SESSION HOURS AND COST AND THERAPEUTIC OUTCOME

Therapeutic Outcome								
Improved			Stayed the Same			Got Worse		
$\bar{X}$ hours	SD	N	$\bar{X}$ hours	SD	N	$\bar{X}$ hours	SD	N
9.22	5.655	36	7.43	6.59	70	4.95	3.22	15
$\bar{X}$ Cost $616.10			$\bar{X}$ Cost $478.39			$\bar{X}$ Cost $335.02		

TABLE 8

MEANS AND SD'S FOR NUMBER OF SESSIONS BY TREATMENT CHANGE

Number of Sessions		Improved	Got Worse	t	df	p
	$\bar{X}$	9.223	4.946	2.680	49	.05
	SD	5.655	3.216			
	N	36	15			
	$\bar{X}$ Cost	$616.10	$335.02	F = 3.092		

TABLE 9

TREATMENT OUTCOME AND COST PER HOUR OF SERVICE
FOR IMPROVERS AND NON-IMPROVERS

		Number of Subjects	Number of Hours	Average Cost	Total Cost
Improved	One Impairment Rating	26	242.55	$624.39	$16,234.18
	Two Impairment Ratings	10	88.30	$590.14	$ 5,901.35
Got Worse	One Impairment Rating	8	43.25	379.35	$ 3,034.76
	Two Impairment Ratings	2	12.15	402.66	$ 805.32
	Three Impairment Ratings	5	17.20	237.04	$ 1,185.21
	TOTAL	51	403.45	532.57	$27,160.82

TABLE 10

MEANS AND SD's FOR NUMBER OF SESSIONS
BY TREATMENT TYPE

Number of Sessions		Individual	"Other"	t	df	p
	$\bar{X}$	7.826	8.035	.128	49	ns
	SD	5.421	5.469			
	N	17	34			
	$\bar{X}$ Cost	$524.75	(incl. med.) $537.77	F = .982		